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| 09/810,463      | 03/19/2001  | Masumi Kubo          | 4034-22             | 8977             |

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EXAMINER

SCHECHTER, ANDREW M

ART UNIT PAPER NUMBER

2871

DATE MAILED: 06/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/810,463

Applicant(s)

KUBO ET AL.

Examiner

Andrew Schechter

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 28 March 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 2-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2-19, 22-25, 29 and 30 is/are allowed.
- 6) ☒ Claim(s) 20 and 26 is/are rejected.
- 7) ☒ Claim(s) 21, 27 and 28 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 8.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Specification*

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: "Liquid crystal display device having sub-pixel electrodes and defect correction method therefor".

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 20 and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by *Nishiki*, Japanese Patent Document No. 11-109417.

*Nishiki* discloses [see Fig. 7, for instance] a liquid crystal display device comprising substrates [7], liquid crystal [15], switching elements [3], pixel electrodes [10, 11 combined], the second substrate having a counter electrode [14], wherein each pixel has a first sub-pixel electrode [10] and a second sub-pixel electrode [11], and the

second sub-pixel electrode connected to the switching element via a connection line [the part of 4 between 10 and the lower contact hole 8, in the lower half of the pixel] provided separately from a path which electrically connects the first sub-pixel electrode to the switching element [this path is the part of 4 in the top half of the pixel]. The connection line comprises a first region [the wide part at the lower half of the pixel which overlaps the neighboring gate line] which electrically contacts the second sub-pixel electrode [via the contact hole] and a second region [the segment of 4 between 10 and the first region], with the second region having a smaller width than the first region. Claim 20 is therefore anticipated.

Claim 26 is the method of making the device of claim 20, so it is also anticipated.

4. Claims 20 and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by *Ha et al.*, U.S. Patent No. 6,501,519. (This rejection could possibly be overcome by the submission of a certified translation of the applicant's priority document of March 31, 2000.)

*Ha* discloses [see Figs. 12-14, for instance] a liquid crystal display device comprising substrates, liquid crystal, switching elements [TFTs], pixel electrodes connected to the switching elements, and a counter electrode on the second substrate, wherein: each of the pixel electrodes include a first sub-pixel electrode [118] and a second sub-pixel electrode [117] which is electrically connected to the switching element via a connection line [114a] provided separately from a path which electrically connects the first sub-pixel electrode to the switching element, and wherein the connection line comprises a first region [the segment of 114a from Fig. 12 which is

shown in Fig. 13a] and a second region [the vertical section of 114a in Fig. 12, for instance] having a smaller width than the first region. Claim 20 is therefore anticipated.

Claim 26 is the method of making the device of claim 20, so it is also anticipated.

### ***Allowable Subject Matter***

5. Claims 21, 27, and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. Claims 2-19, 22-25, 29, and 30 are allowed.

7. The following is a statement of reasons for the indication of allowable subject matter:

*Nishiki* discloses, in embodiments having the necessary connection line, that the transparent electrode is above the reflective one, so claim 2 is not anticipated by *Nishiki*. In particular, Fig. 5 [in which elements 4 and 11 are the same] discloses the reflection electrode above the transparent one, but the connection from the switching element to the second sub-pixel (the reflection electrode) is the direct contact between the first and second sub-pixels, not via a connection line. U.S. Patent No. 6,195,140 to *Kubo et al.* is a patent which relies on *Nishiki* for foreign priority. Its Fig. 14 is essentially the same as *Nishiki's* Fig. 7. *Kubo's* Figs. 32-33 show the reflection sub-pixel electrode overlapping the transparent sub-pixel electrode via a Mo layer [214]. It is the interpretation of the examiner that this layer does not constitute a "connection line" in the sense of claims 2 and 10 (essentially because it extends as a "line" parallel to the

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junction instead of in the direction across the junction). Claim 2 is therefore allowed, as are its dependent claims 3-9.

Neither *Nishiki* nor *Kubo* disclose the method of cutting the connection line to disconnect the second sub-pixel in the event of a short, as recited in claim 10. U.S. Patent No. 5,977,563 to *Kubo et al.*, made of record by the applicant, discloses the basic technique of correcting for defects, when pixel electrodes short to each other, by cutting connection lines to the pixel electrodes. However, it does not disclose sub-pixels of different heights with the particular connection line recited in claims 2 and 10. Claim 10 and its dependent claims 11-19 are therefore allowed.

The prior art similarly does not disclose the additional limitation of the new claim 22, that (in the context of the device with first and second sub-pixels at different distances to the counter electrode, a feature which *Ha* does not have) there is a defect correction region of the connection line which is not overlaid by the second sub-pixel electrode. Claims 22 and 29 are therefore allowed, as are their dependent claims 23-25 and 30.

The connection line 114a in *Ha* (and similarly in *Nishiki*) is not designed to be cut for defect correction, so the second region's smaller width is not smaller "to facilitate cutting of the second region for defect correction", so claims 21, 27, and 28 would be allowable if rewritten appropriately.

***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Schechter whose telephone number is (703) 306-5801. The examiner can normally be reached on Monday - Friday, 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-4711 for regular communications and (703) 746-4711 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Andrew Schechter  
June 2, 2003



TOANTON  
PRIMARY EXAMINER